## REMARKS

Claims 1-9 are pending in the application. All claims stand rejected. Specifically, claims 1-9 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sharp, "Optimal Preview Car Steering Control", in view of Peng "Optimal Preview Control for a Vehicle Lateral Guidance". The Peng reference is cited for the first time in the Final Office Action.

### Claim Rejections Under 35 U.S.C. §103

According to the Final Office Action, the Sharp reference admittedly does not disclose that the path information comprise a road radius of curvature, or the look ahead scale factor being a function of the intended path radius of curvature. However, according to the Final Office Action, Peng teaches the input having path information containing a radius of curvature, and teaches a look ahead scale factor as a function of the intended path radius of curvature. Thus, it would have been obvious to modify Sharp's method of determining a look ahead scale factor with Peng's use of a radius of curvature, because it would result in reduced errors in calculating preview errors.

Applicants traverse, and submit the present claims are allowable in view of Peng and Sharp because no valid reason has been shown why one of skill in the art would combine the references as suggested in the Office Action, particularly in view of Sharp's sole concern for the study of path following errors.

The Sharp reference concerns a study of driver preview time, depending upon travel speeds, for path error minimization. (p.16). Sharp developed an optimized model for three different steering control situations. A careful reading of the Sharp reference reveals that the "preview time" disclosed therein does not vary as a function of the intended path curvature as claimed in the present application. Rather, the preview time discussed in Sharp differs based upon the priority of the following variables: attitude angle control, path tracking, and steering input. Depending upon how these variables are prioritized, the preview time will vary. In other words, the variability of the path does not matter. Only vehicle speed, as it relates to preview time as a function of attitude angle control, path tracking, and steering input was studied by Sharp. Critically, however, the preview time does not vary within any given priority model for any variable

other than vehicle speed. Thus, as explained in Sharp, when path following precision is given the highest priority (referred to as system (a) in Sharp), about one second of preview time is all that is needed at low speeds and about 1.5 seconds is sufficient at high speeds (page 10, second full paragraph). However, when priority is placed on attitude angle control, shortened preview times are permissible (system (b) in Sharp). Finally, when steering input is of greatest concern, much longer preview times, i.e., on the order of 8 seconds, are necessary. The conclusion of Sharp, therefore, is that path tracking control systems will require varying preview times depending upon the emphasis of the control methodology. For example, if steering input accuracy is of highest priority, very long preview times will be required for accurate path tracking.

In simple terms, according to Sharp, if a path tracking control scheme is desired, one must choose which type of error correction to emphasize given its affect on preview times for accurate path tracking. It makes sense, therefore, that the control scheme study should be independent of the path characteristics. In other words, it is not necessary to introduce considerations of path radius of curvature to determine which control variable provides the least preview time for accurate path tracking.

Accordingly, regardless of whether Peng mentions path radius of curvature, no valid reason has been shown why one of skill in the art would modify the control scheme of Sharp to consider radius of curvature. Sharp is directed toward a different problem than the present invention. Sharp concerns path tracking error, while the present invention concerns revising look ahead points for the control scheme while operating at the dynamic limits of the vehicle.

Importantly, no portion of the Sharp disclosure teaches or suggests varying the preview time based upon the road radius of curvature as set forth in each of independent claims 1, 4 and 7 of the present application. The fact that one of skill in the art may have the capability to modify Sharp to arrive at the invention is not the test for whether one of skill in the art would have arrived at the invention based on the teachings of Peng and Sharp. *Ex Parte Levengood*, 28 USPQ2d 1300, 1301-02 (BPAI 1993) ("That which is within the capabilities of one skilled in the art is no synonymous with obviousness."). No valid motivation to include road radius of curvature in the

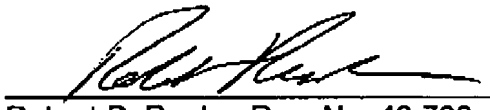
control scheme of Sharp has been shown. Accordingly, for this reason, the rejections under 35 U.S.C. §103 should be withdrawn.

**Conclusion**

Having overcome all of the objections and rejections set forth in the Office Action, Applicants submit that claims 1-9 are in a condition for allowance. A Notice of Allowance indicating the same is therefore earnestly solicited. The Examiner is invited to telephone the Applicants' undersigned attorney at (248) 223-9500 if any unresolved matters remain.

Respectfully Submitted,

**ARTZ & ARTZ P.C.**



Robert P. Renke, Reg. No. 40,783
28333 Telegraph Road, Suite 250
Southfield, MI 48034
(248) 223-9500

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